TREES

OF THE FOREST

Their Beauty and Use

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE PA 613

F-499683

Walk In the Woods One Day . . .

It will not take long to realize or remember that of all America's riches, the inherited and acquired, the natural and manmade, trees are among our most cherished.

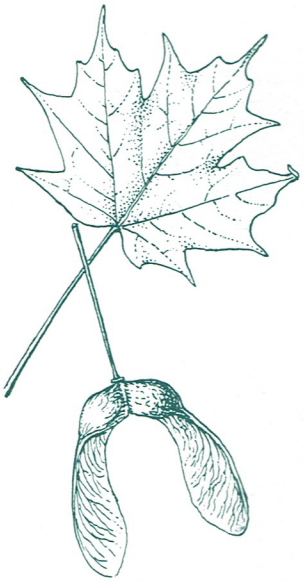
It would be a poorer nation indeed without them, if a nation at all. As living creatures they delight the eye and inspire belief as you walk among them. As wood, logged and hewn, they serve civilization in myriad ways.

When the Founding Fathers arrived, the native American forest stretched almost unbroken from the Atlantic to the Great Plains and beyond the Plains to the Pacific. Trees were the source of their first crude forts, of their furniture, firewood, fruit, and even of their medicines. Game and fish for the table of pioneers were harvested in cool woodland shadows.

The Nation's forests have shrunk appreciably through the years, yet today almost 800 different species of native trees and hundreds of others introduced from foreign lands grow and thrive in the United States. They fulfill many purposes. Peach, apple, and cherry are trees of the orchard. Sheltering your home, shading your street, or lending dignity to your city park may be the elm, oak, maple, weeping willow, or handsome, slow-growing English yew. You may be on speaking terms with a nearby Lombardy poplar, a slender, stately tree which President Thomas Jefferson once planted in rows along Pennsylvania Avenue in Washington. Or perhaps the wide-spreading ornamental hackberry, which like all trees serves more than a single use: robins and mockingbirds thrive on its purple-black berries.

Other types of trees, including more than 175 species of commercial value, grace our contemporary forest. They add to the grandeur and glory of our land, immeasurable in their fullest meaning, though in a tangible sense furnishing food and protective cover to wildlife, shade and firewood to campers, and timber to us all.

The future of the forest? One day walk in the managed stands of our 154 National Forests. Observe how these lands are managed for many uses, how their trees benefit from man's touch and influence, and how logging with a purpose enhances the health of the forest and its value to your children's children. Meanwhile, follow through these pages the story of growing trees and timber on the National Forests.



Light, Water, Soil, and Space for Growth

What are the National Forests from which much of our timber comes?

Trees are their dominant characteristic, but trees are hardly alone or even self-sufficient, for a forest is a vibrantly complex, interwoven community of many forms of life. Within its depths the tree, shrubby plant, large animal, and minute creature struggle together and against each other to survive and to perpetuate their species.

From the beginning to the end of its days, the tree exerts a ceaseless effort in the contest for life. Like man, it must have air, light, heat, water, and food. Having once taken root, it can never move to another spot—yet within its own sphere it acts and reacts in drawing nourishment from soil and air. Roots penetrate downward for water and mineral foods. The trunk carries these to the crown and outward to the leaves. Meanwhile, within tiny leaf cells the amazing green pigmentation called chlorophyll captures light waves and the energy of the sun. These combine with carbon dioxide breathed from the air to form a simple sugar, later converted into other carbohydrates and then into wood. The tree shows its growth and age through the addition each year of a coat of new wood cells formed by the cambium layer between the outside layer of the sapwood and the bark. The sapwood is the living tissue through which water passes from roots to crown.

In field and lawn, the shade tree has space to reach *upward and outward* for its sunlight. As it grows, the

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limbs spread and the crown becomes broad and rounded. But the forest tree lives close to its neighbors, and in turning to the sun must reach *upward*. Its lower branches, cut off from sunlight, wither and fall. It develops height, with a long, clean trunk, attractive to the eye and highly suited for the milling of its wood into thousands of useful products.

Beneath the canopy of upper limbs and leaves, openings on the forest floor fill with little trees. They shoot up from the ground or sprout from the stumps of old trees which have died or been cut. They test their strength to survive against lesser plants, insects, and animals, for whom *they* are the sustenance of life. And they must compete with each other.

But survival of the fitter does not produce National Forests of the fullest value in our modern day, for not all tree species are useful to man. These and other undesirable forest vegetation fight for their share of soil and water and, if strong enough, crowd out or slow the growth of more desirable trees. Very old trees, like very old people, become afflicted with infirmities. They suffer disease and decadence; unlike people, they seldom die alone, for they threaten an entire forest by inviting infestation by insects and creating conditions favorable to fire.

Through forest management and its implements, including timber cutting, National Forests are cared for in their own best interests and in the interests of man. The most useful trees are perpetuated in their proper environment through *silviculture* (*silva,* the forest, and *culture,* to cultivate), the science of producing and caring for a forest.

How does this work? The Forest Service ranger, to begin with, must understand the surroundings in which specific trees are born from their seeds and the conditions which produce their best growth. He must also be familiar with society's use and needs for timber-type trees. These constitute two general classes: Softwoods or conifers, the mostly evergreen cone bearers; and the hardwoods or broadleaf trees, of which most are deciduous, that is, shed their foliage in the fall.

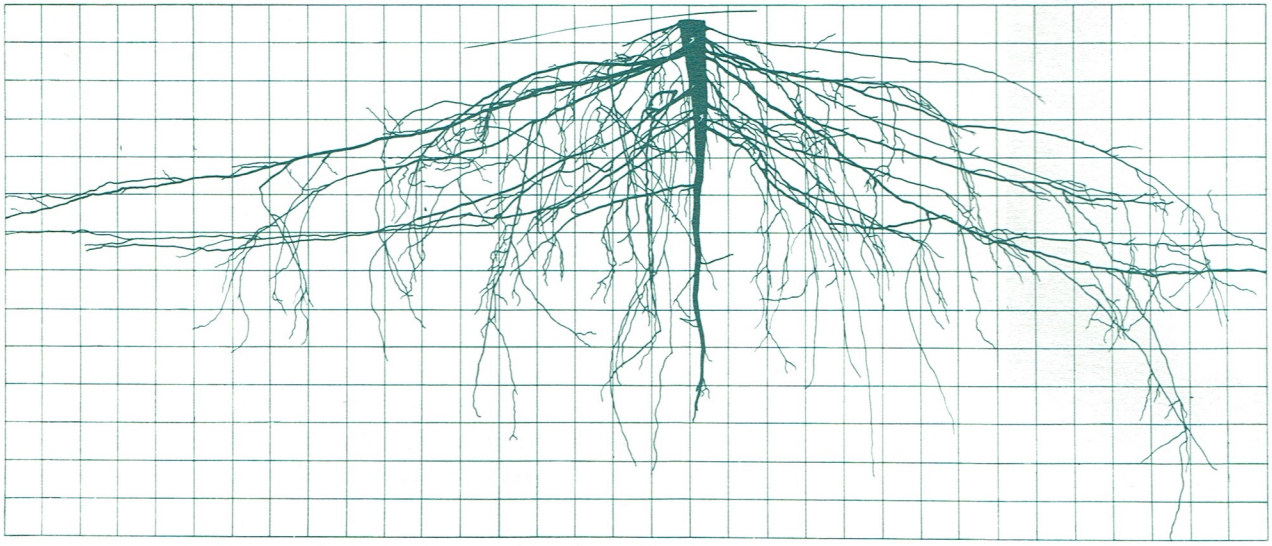
Among the conifers are pine, fir, spruce, redwood, and hemlock. Conifers, the oldest of tree families, were widespread on the face of the earth millions of years ago. The somber giant sequoias still stand as living history predating the birth of Jesus. Bristlecone pines have been

found that range from 4,000 to 4,600 years old. Conifers are the main strength of America's timber resources, providing four-fifths of the large sawtimber trees. The conifer is called softwood and is used extensively in construction and fiber for paper pulp.

Broadleaf trees include oaks, maples, elms, and sycamore. Their wood is used in furniture, among other purposes, and together they are called hardwoods (although a few are softer than some softwoods).

The forest manager knows that deciduous trees require some moisture throughout the year, while conifers can survive where it is concentrated mostly in winter snowfall. But this is only the start, for there is also the magic of tree seeds to fathom, interpret, and adapt.

Seeds range in weight from the heavy, large black walnut down to specks almost as fine as sand. Some are borne on wings, so remarkably balanced that they ride the winds for miles. Some are sown *only* by birds and other animals—if not consumed by them first! Many trees produce seeds every year, others less often or irregularly. Of every 100 seeds reaching the ground, only a few may sprout. And the cones of some trees, like jack pine in the Lake States (sometimes called fire pine), and knobcone pine in the West, are opened and their seeds prepared for germination by fire.



The forest manager must reckon with seed behavior and the complex conditions required for seeds to take root and reproduce the forest. Some are best allowed to seed naturally from mature parent trees. Others are best sown by hand or by airplane. Millions of seedlings are grown in National Forest nurseries and are planted in the forest by hand and by machines. Then, once in the ground, the young trees (plantations) may require some shade to survive, freedom from competing brush, and protection from animals, insects, and fire. Providing this is called plantation care.

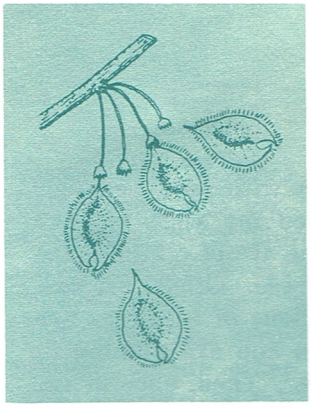
Forest trees are also classified by their tolerance and intolerance to shade. Sugar maple, for instance, is called a tolerant tree because it will endure as a youngster with only a minimum of sunlight under the cover of taller trees. But Douglas-fir is relatively intolerant to shade, as is black cherry.

Various silvicultural cutting practices are used to obtain the desired degree of light and to encourage seedling establishment. Cutting can alter the density of the forest canopy or *overstory* to enable more light to reach the forest floor. Or it can open a new bed for seed if located the proper distance from nearby uncut stands. For southern pines, such a distance is usually not over 500 feet; for red spruce, in contrast, it may be as far as 1,500 feet.

In essence, three systems of harvest cutting are applied on the National Forests: Selection cutting, seed tree cutting, and clear cutting, with variations based on specific terrain and other conditions.

Some forests are best managed through selection or partial cutting. In starting harvest of a virgin stand, older trees are cut first. So are the defective and diseased. Younger, healthier trees are encouraged, by this release from competition, to further growth—much like the weeding of a garden. The forest is also opened to stimulate new seedling growth. In seed tree cutting, the entire stand is logged except for a few carefully selected seed trees which are left to regenerate the forest. These, in turn, are harvested after the new stand has been successfully started.

Douglas-fir, however, is one of several species best managed with clear cutting in blocks. Selection cutting of the lusty giant has been tried in the National Forests, but with little success. It proved difficult to remove the tall Doug-



las-firs, standing over 200 feet, without seriously injuring others as they fell. Those remaining in a stand, shorn of protection from neighboring trees above and interweaving roots below, became victims of blowdown in high winds. Nor would Douglas-fir reproduce itself without benefit of full sunlight. Thus, clear cutting or patch cutting is practiced on blocks of 40 to 100 acres; this enables sunlight to reach the ground and to help the valuable Douglas-fir forest renew itself. Seeding by hand or by airplane and planting nursery-grown seedlings are methods used to reforest these large openings.

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The Balances of Management

Throughout the 182 million acres of the National Forests other important factors are weighed in the balance with the need to produce timber. They may be the reason for heavy cutting, light cutting, or no cutting.

Wildlife, for example, has become increasingly dependent upon the National Forests. Almost everywhere the land available to it has been reduced through the spread of towns, cities, industries, and highways. It is estimated that the native American forest once covered more than 900 million acres, with extensive borders and many open places where grass, plants, and herbs grew and served as food for deer, elk, wild turkey, and other animals and birds. In our modern managed forests, clear cutting and heavy selection cutting make more food available to animals and birds by opening clearings and creating *edges*.

On the other hand, fish are benefited by not harvesting timber along the streamside. The forest canopy provides shade and a favorably cool temperature. Insects fall in the water from overhanging branches, providing food.

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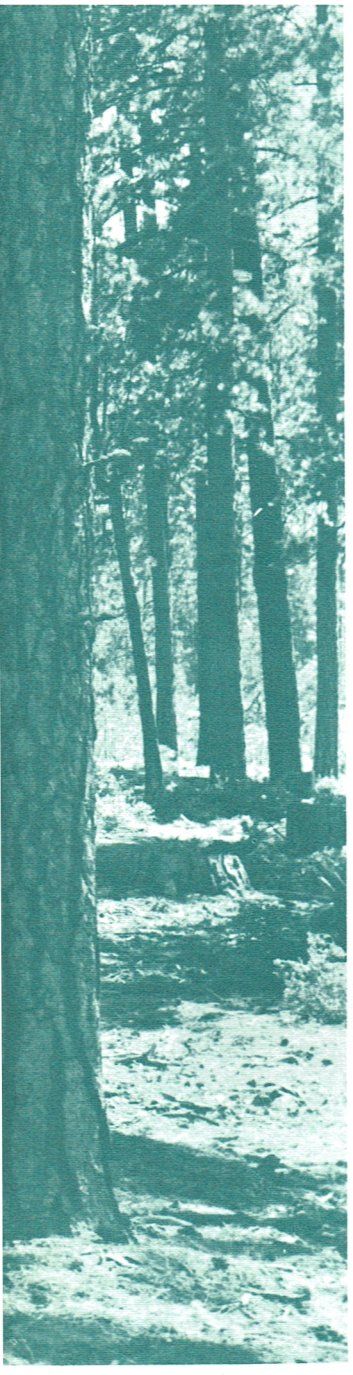
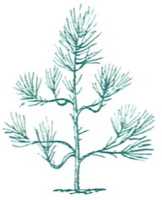


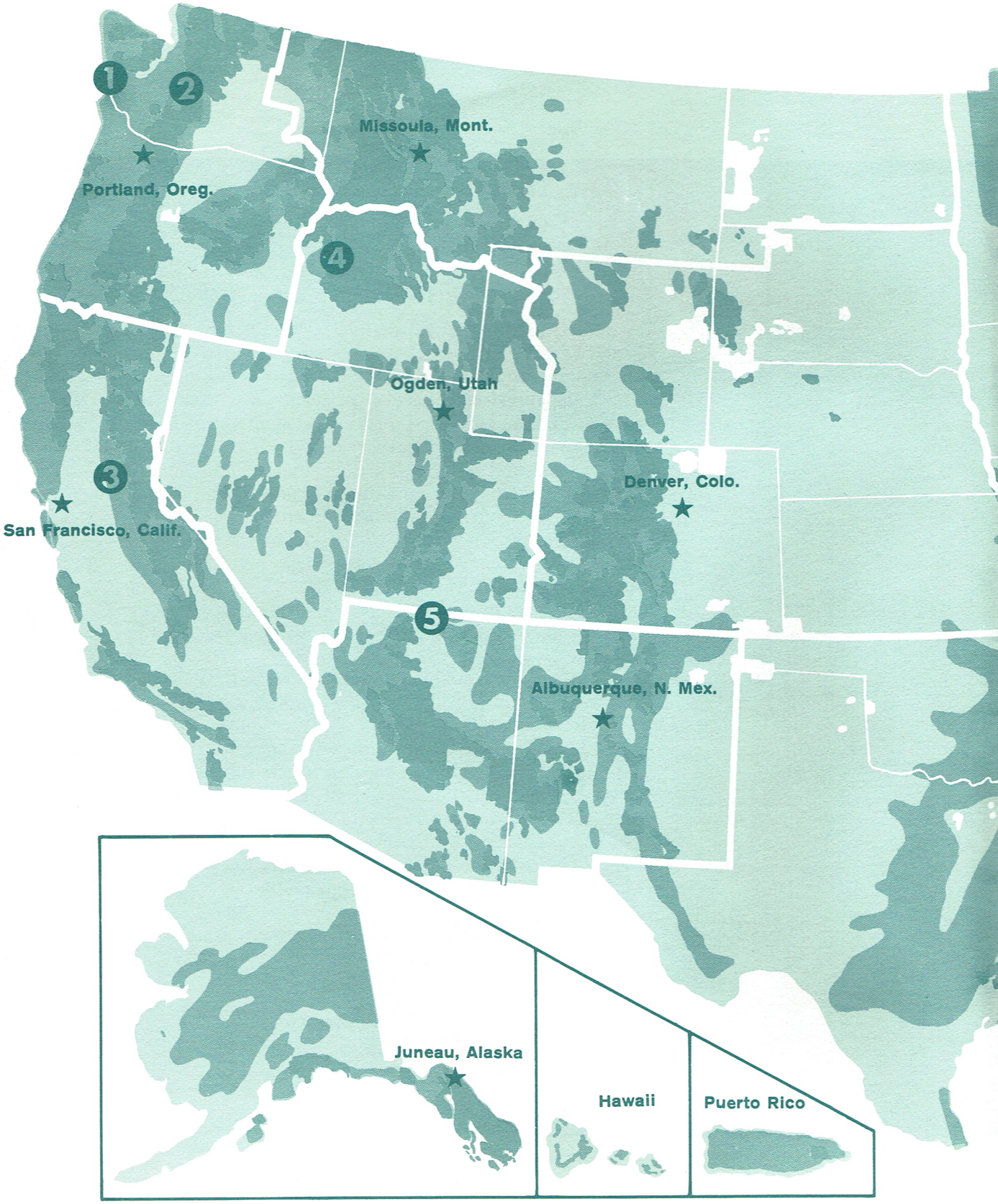


Roots of trees and shrubs bind the soil, holding banks in place, affording sheltered retreats along the streamside.

A vital factor in balanced management is the need to protect the forest as a natural reservoir of water. Uncontrolled logging and fire can strip the land of its porous cover, leaving it unable to absorb water. The disastrous consequences are soil erosion, flash floods, and muddy streams. Thus, as soil conditions require, the forester may plan light to moderate selection cuttings. Or in other cases, as in the Southwest where virgin timber grows amid a dense understory of young growth and water is in short supply for a growing population, he may consider heavy thinnings to replace deep-rooted trees with grasses and broadleaf herbs, making more water available for human use.

In campgrounds and picnic areas, recreation values are protected by limiting cutting to dead, dying, and diseased trees. In natural areas, old trees and surrounding vegetation are subject only to minimum management so that visitors may read living history as written on the land. In wilderness and wild areas, timber cutting is not allowed. Those primitive lands, 14½ million acres in all, have been dedicated by the Forest Service to wilderness use and are protected in their natural state for those who enjoy extensive foot or horseback travel in serenity and solitude.

Each forest resource and each of the many uses of resources is needed in the pattern of a growing Nation. Each is accorded its place in balancing National Forest plans of management.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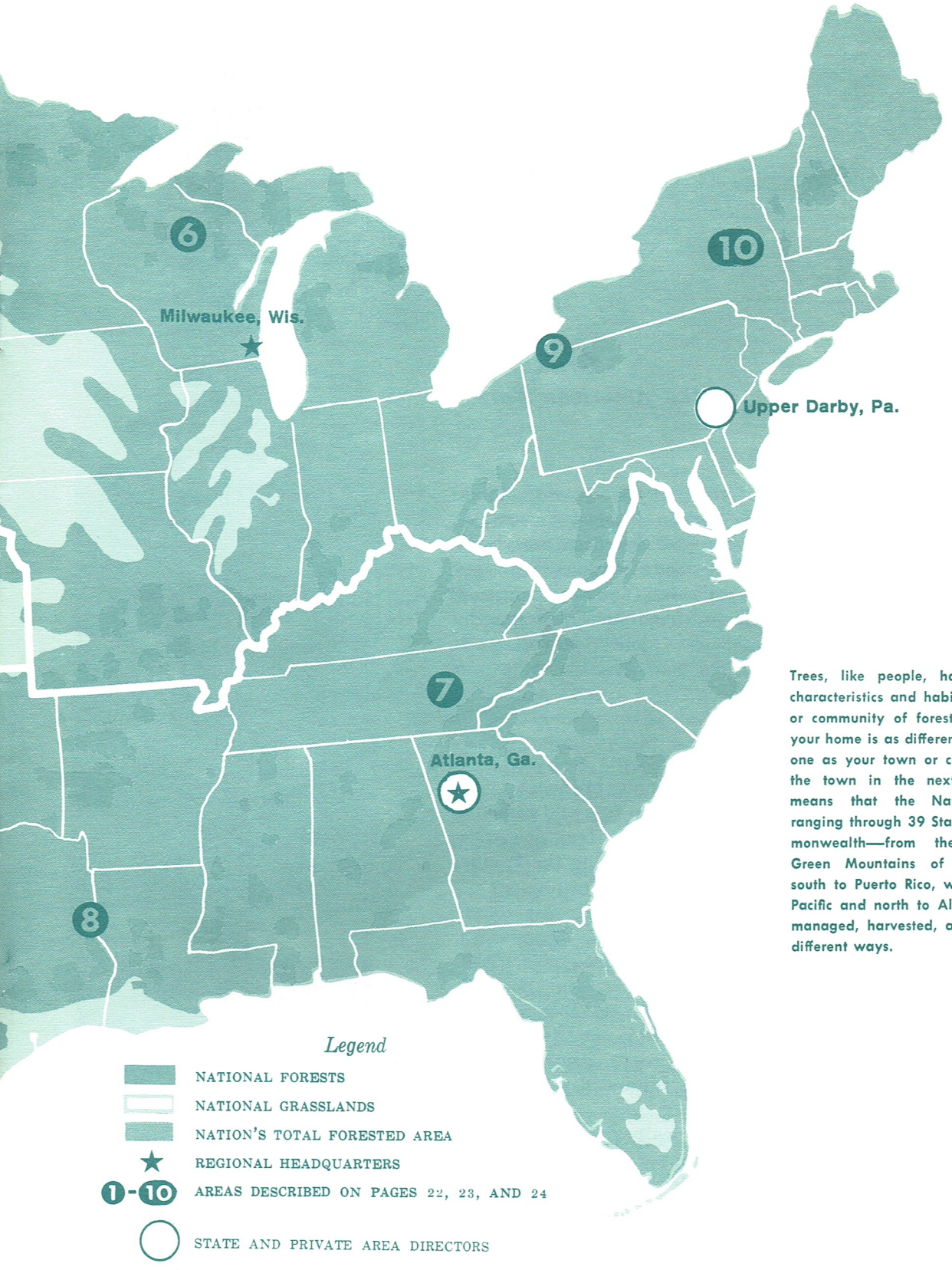


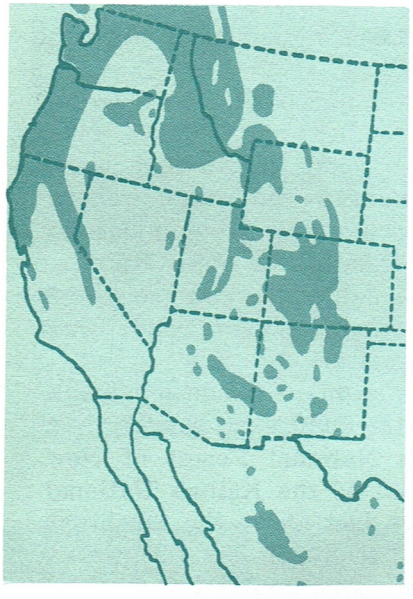
Trees, like people, have their own characteristics and habits. The stand, or community of forest trees, nearest your home is as different from the next one as your town or city differs from the town in the next county. This means that the National Forests, ranging through 39 States and a Commonwealth—from the White and Green Mountains of New England south to Puerto Rico, westward to the Pacific and north to Alaska—must be managed, harvested, and renewed in different ways.

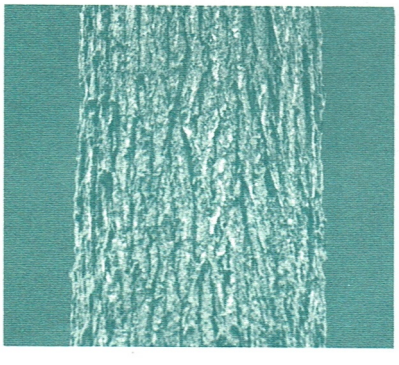
Great Trees of the American Forest

Douglas-fir, ponderosa and southern pines, yellow-poplar, sugar maple, and the white oak are great American trees, beauties on the landscape wherever they stand. As forest trees, they are grown to serve many useful purposes. You can derive more enjoyment from your travels through the National Forests by observing these and other species and learning why each grows best in its particular environment.

Douglas-Fir, the State tree of Oregon, produces more wood products than any other American tree and perhaps is the world's most valuable species of conifer. It grows in moist forests from the Rocky Mountains to the Pacific coast, reaching its largest size on the western slopes of the Cascade Mountains and along the northwest coast, where soil is rich and moisture plentiful. Douglas-fir grows second in size only to the California sequoias, giant sequoia and redwood (*Sequoia gigantea* and *Sequoia sempervirens*), with heights of 200 feet or more and diameters of 3 to 6 feet. Under favorable conditions individual trees may live a thousand years, grow 10 feet through and 300 feet tall, with furrowed, cinnamon-brown bark 1 foot thick.

Douglas-fir scatters its seed prolifically (with an average of 42,000 seeds per pound taken over its entire range; California has 30,000–35,000, British Columbia 49,000) and young trees grow fast and dense in the mineral soil of



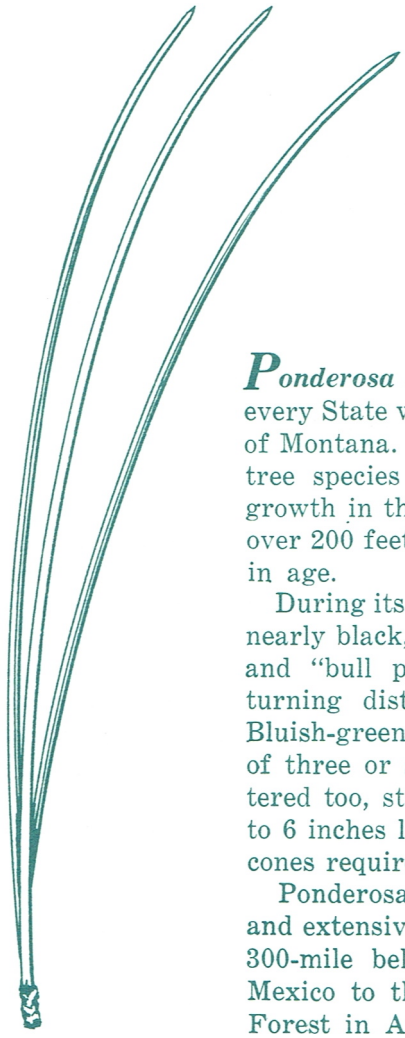


the Northwest. At 10 years they are 15 feet high, and in 25 years are twice as tall with sometimes as many as 1,000 trees to the acre. As they grow, the forest thins naturally; in a century the trees can reach 200 feet in height and may then number about 115 to the acre.

Small trees are hardy and attractive for ornamental planting. With their soft, rich green needles hanging on long after cutting, they are also beautiful and popular Christmas trees.

The wood, yellowish to light red in color, is strong for its fairly light weight, and is resistant to decay. The size of the tree permits the manufacture of lumber remarkably free of knots and other defects, with pieces 60 feet long by 2 feet square. The softwood veneer and plywood industries depend almost entirely on Douglas-fir for raw materials. Recently new uses (fiberboard, book paper, wrapping paper) have been developed for sawmill leftovers.

For years this unique conifer was a botanical puzzler, having been called spruce, hemlock, balsam fir, and even pine. The scientific name meaning false hemlock (*Pseudotsuga menziesii*) honors Dr. Archibald Menzies, physician and naturalist with Captain Vancouver's voyage, who discovered this tree on the Pacific coast in 1791. It remained for the roving Scotch botanical collector David Douglas to send the first seeds to Europe in 1827. Soft, deep yellow-green or blue-green needles about an inch long, flattened and pointed, grow all around the twig. The oval cone with distinctive three-pronged bracts hangs like a pendant.

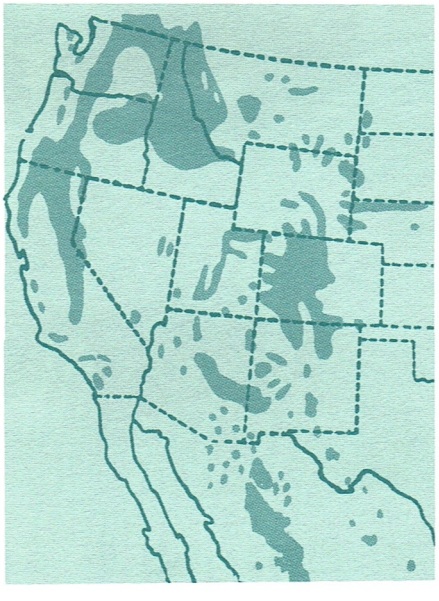


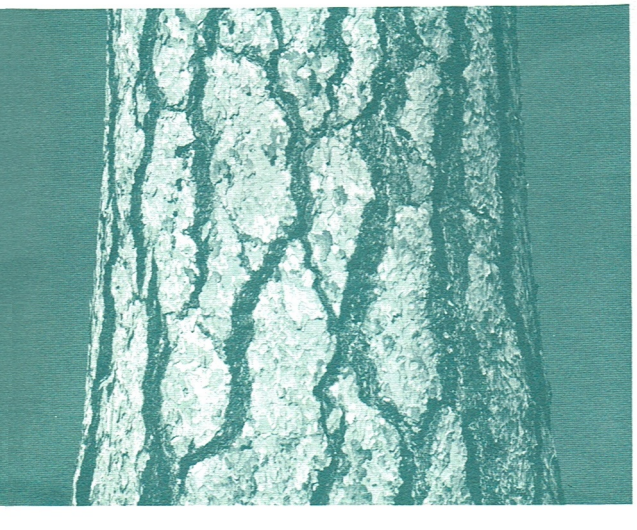
Ponderosa Pine, a beautiful and hardy tree, grows in every State west of the Great Plains, and is the State tree of Montana. It has a total stand greater than any native tree species except Douglas-fir, and reaches maximum growth in the resin-scented Sierra forests of California: over 200 feet in height, 5 to 8 feet in diameter, 500 years in age.

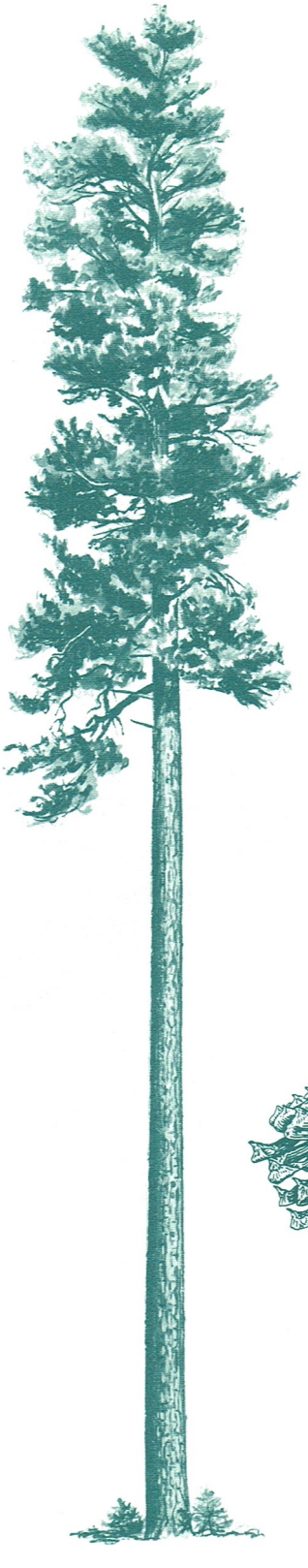
During its early life ponderosa pine bark is dark brown, nearly black, which prompts the local names "blackjack" and "bull pine." Then it becomes plated and scaly, turning distinctive cinnamon-brown to orange-yellow. Bluish-green needles, 4 to 7 inches long, grow in clusters of three or sometimes two. The brown cones are clustered too, standing erect on small stalks and growing 3 to 6 inches long. Like most other pines, the ponderosa's cones require two seasons to mature.

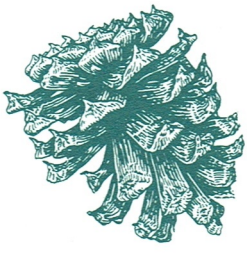
Ponderosa pine (*Pinus ponderosa*) is the most valuable and extensive timber tree of the Southwest, ranging in a 300-mile belt from the Gila National Forest of New Mexico to the Kaibab Plateau of the Kaibab National Forest in Arizona. It grows just above the sagebrush and pinyon-juniper woodland, requiring less water than most other commercial trees. Tenaciously the seedling withstands drought, often surviving on only the dew of night. A year-old tree will sink its roots 2 feet deep in quest of water, a 4-year-old tree more than twice as deep. In many places on these southwestern forest lands, as many as 6,000 to 10,000 young ponderosa pines stand congested on a single acre, competing for water, soil nutrients, and light.

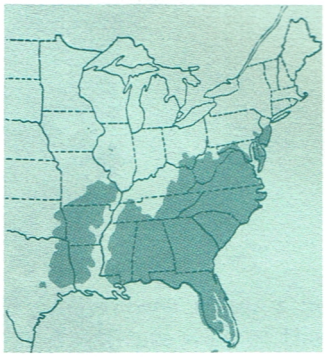
At its best the ponderosa pine, rising to a broad, conical crown, makes a handsome ornamental tree. It also makes hard, strong, and fine-grained wood. High-grade ponderosa is used for doors, sashes, frames, and paneling; the low-grade wood for boxes, rafters, joists, and railroad ties.











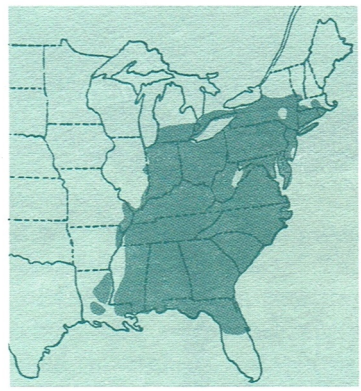
Southern Pines are now recognized as a vast, important source for the Nation's future timber supply. An indication of the South's role in forestry is the fact that it produces fully 80 percent of all forest tree seedlings grown in the United States. The pine is the State tree for both Alabama and Arkansas.

The most plentiful southern pine, loblolly (*Pinus taeda*), often grows in moist depressions which in the early days were known as "loblollies." Its needles are borne three in a cluster and grow 6 to 9 inches long. This rapidly growing tree develops a clean, straight trunk, reaches maturity in about 70 years, and sometimes yields 20,000 to 30,000 board feet of timber per acre. Slash pine (*Pinus elliottii*) is a beautiful tree of the Coastal Plain with lustrous dark green needles, usually three in a cluster and 8 to 12 inches long, and a purplish-brown bark. The two other major southern pines are shortleaf (*Pinus echinata*), with slender bluish-green needles 5 inches long or less, two or three in a cluster, and longleaf (*Pinus palustris*), with tapering trunks up to 120 feet in height, and dark green needles three in a cluster, 10 to 15 inches and sometimes 18 inches long. Longleaf and slash pines are the principal sources of turpentine and rosin, known as naval stores because of their early use in caulking wooden ships. Six other species of pines are native in the South. The southern pines have a variety of other uses, notably for paper pulp, housebuilding materials, fuel, and general millwork.

Yellow-Poplar, or tuliptree, distinguished by its excellent form and rapid growth, is one of the tallest and most valuable hardwoods in the United States. Widely distributed through the Eastern States, it grows in sheltered coves of the Appalachians in stands mixed with other large broadleaf trees and an understory of dogwood, azalea, rhododendron, and many wild flowers. It is the State tree of Indiana, Kentucky, and Tennessee. The yellow-poplar reaches heights of 80 to 120 feet (maximum recorded 198 feet) and diameters of 2 to 6 feet, with its straight, deeply furrowed trunk clear of limbs for much of its length. It may live 250 years or more.

Hardly any American tree has a richer tradition than the yellow-poplar. "Everyone," wrote William Byrd, in his early *Natural History of Virginia,* "has some of these trees in his gardens and around the house, for ornament and pleasure." Indians and settlers made dugouts of it. The Delaware Swedes called it the "canoe tree." George Washington, who had an astonishing knowledge of many trees and their uses, planted yellow-poplars at Mount Vernon. Two of them, nearly 120 feet tall, still vigorous and growing, are now the tallest trees at this great estate.

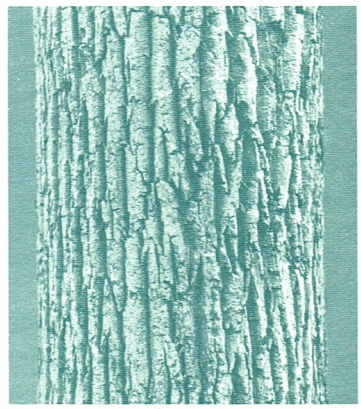
Though called yellow-poplar, because of its light-colored softwood, it is really a member of the magnolia family and bears the scientific name *Liriodendron tulipifera,* "lily tree bearing tulips." Its large flowers, a blend of

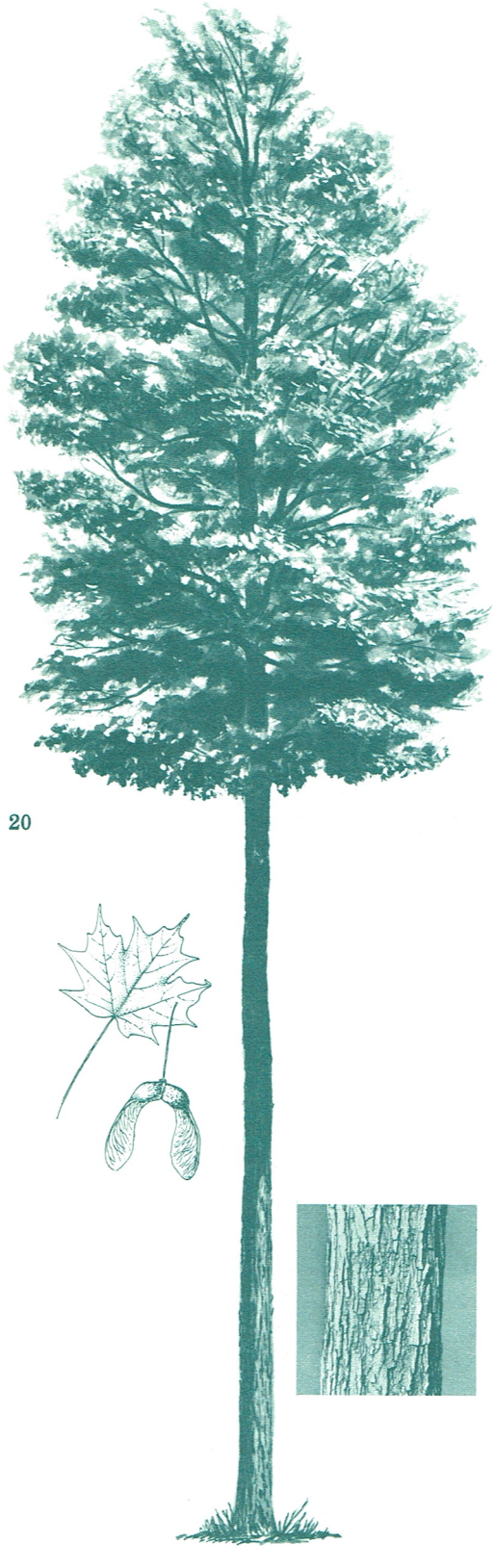


green and yellow tinged with orange, are among the early spring arrivals in the forest, a welcome source of nectar to honeybees. The blossoms emerge above a background of long-stemmed, glossy, notched leaves that tremble in the slightest breeze. The flowers develop into dry, cone-like fruit, from which winged seeds fall twirling to the ground.

Young trees shoot toward the light and, in some of the best stands, grow 50 feet in 10 years. The twigs and branches of very small yellow-poplars are tasty to deer, which sometimes cause extensive damage.

With its attractive flowers, foliage, and symmetrical form, the yellow-poplar is frequently adapted for shade and ornamentation. The straight-grained wood of yellow-poplar is used in furniture and woodware, for veneer, and in construction. Its importance as a lumber tree has increased immensely since the tragic loss of the once great forests of chestnut. (Many foresters regarded the chestnut as the finest hardwood tree in America before it fell victim to a relentless blight, a fungus introduced from Asia.) Its nuts were a food staple of squirrels, turkeys, bears, and other animals, all of which have suffered since the passing of the chestnut. No remedy has been found for the blight, but Forest Service researchers have been encouraged recently in their efforts to breed a blight-resistant chestnut.

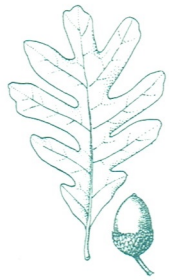




Sugar Maple, the most abundant and versatile of all the maples, the showy beauty of the autumn landscape, is notable as the source of fine hardwood lumber and maple sirup. It is found in nearly every State east of the Great Plains, with its largest stands, usually mixed with other hardwoods, in the Lake States and New England. Sugar maple grows slowly but lives 300 to 400 years, reaching heights of 80 to 120 feet. It is the State tree of New York, Vermont, West Virginia, and Wisconsin.

The apt scientific name, *Acer saccharum,* refers to the sweetness of the sap, from which maple sirup and sugar are boiled when winter is on the wane. Like the sugarcane and sugarbeet, this maple is characterized by an unusually high concentration of sugar, produced the year before and stored in roots and trunk during the dormancy of winter. With leaf buds swelling and the imminence of spring, the sap rises and is tapped just inside the bark by driving in a spout and attaching a tube or hanging a bucket beneath it. In this sturdy, stately tree, tapping may go on for years without seriously affecting the life of the tree or the quality of its wood. In spring, after the sugaring-off season, the maple sends forth myriads of greenish-yellow clustered flowers from which bees obtain pollen and nectar. In early summer seeds mature and fall to the ground on papery wings. Later, in autumn, sugar residue in heart-shaped thin leaves combines chemically with other substances to produce the most striking orange-yellows and reds of the hardwood landscape.

Maple has been a choice wood since the time of the Romans, who used it for their pikes and lances as well as furniture. Known to the lumber trade as hard maple, the strong, close-grained wood makes firm flooring, lustrous furniture, bowling alleys and pins, and musical instruments. Accidental forms known as curly maple and birdseye maple are prized for fancy-figured furniture and cabinets.



White Oak has been known and loved since the earliest days of settlement in the New World. It reminded the colonists of the English oak—and the Indians showed how to boil and eat its large acorns. White oak grows from New England south to Florida, through the Middle West to the Lake States, and as far west as Oklahoma and Texas. It is the State tree of Connecticut and Maryland, while "native oak" is the State tree of Illinois.

This tall, broad-crowned tree reaches heights of 80 to 100 feet (maximum, 150 feet), with diameters of 3 to 6 feet. Its whitish or pale gray bark is decidedly lighter in color than that of the black (or red) oak group. Its scientific name *Quercus alba* includes the classic Latin generic name for all oaks, *Quercus,* and *alba* (white), applied by the famous botanist Linnaeus.

The large leaves are formed with five to nine rounded lobes and, unlike the black oaks, have no bristles. The deep somber brown, or russet, of the oak leaf is a familiar feature of the autumn landscape, and on young trees many dead leaves remain attached throughout the winter. Acorns, the seed of the oak, mature in early autumn. These shiny brown, sweet-flavored nuts, known as mast, have become an important food for bears, squirrels, and birds, particularly with the passing of the chestnut.

The oak grows slowly but lives long, sometimes 500 to 600 years. In open fields or lawns the trunk is shorter and the branches spread outward 80 feet or more. In the forest, white oak grows best in deep humus soil and is found in a mixture with other oaks, hickory, and maple.

Of the more than 20 species of commercially important Eastern oak, white oak is truly outstanding. From the earliest days it provided a valuable source of timber for houses, ships, and furniture. Strength, durability, and beauty are the words for white oak. Its uses range from barrels and bridges to flooring and fine cabinets.

Exploring the World of Trees

In every National Forest there are places where visitors can see and learn more about America's trees—the firs, pines, poplars, maples, and oaks already briefly described, and others of the forest's 175 commercially important species. These areas of outstanding interest, demonstrating various phases of tree growth, management, and use, are located in every section of the country. Among these are the following 10:

❶ *The Big Acre, near Lake Quinault, Wash., Olympic National Forest, Pacific Northwest Region.* This plot encompasses giant Douglas-fir and other species growing in favorable conditions of the rain forest. A replica is shown in diorama in the Hall of North American Forests in the American Museum of Natural History in New York. On the east side of the Olympic Peninsula, Mount Walker Summit (elevation 2,769 feet) looks deep into ridges and valleys with examples of block cuttings where Douglas-fir is growing anew.

❷ *Wind River Experimental Forest, where forest research began in the Pacific Northwest, near Carson, Wash., Gifford Pinchot National Forest, Pacific Northwest Region.* The arboretum is a proving ground for conifers of the world and now has groups of more than 135 species. Separate areas are devoted to shade tolerance, seed dissemination, rodent control, and other studies. And nearby at the Wind River Nursery, about 5.5 million new trees are produced yearly for reforestation in the Northwest.

❸ *Institute of Forest Genetics near Placerville, Calif., Eldorado National Forest, California Region.* The Eddy Arboretum, named for its founder James G. Eddy, contains species of pines from all over the world: 70 species, 35 additional varieties, and 90 different hybrids. It was established in 1925 for breeding and improving this group of timber trees. The Institute, working to propagate faster growing, disease-resistant trees, is successfully crossbreeding species such as Jeffrey and Coulter pines into superior strains.

❹ *Town Creek Plantations, Centerville, Idaho, north of Idaho City Ranger Station, Boise National Forest, Intermountain Region.* This 200 acres of new forest was dedicated to the youth of Idaho in 1955, on the 50th anniversary of the Forest Service. Ponderosa pine plantings were made with different techniques every year for 5 years and are being studied in order to develop best methods for regeneration.

❺ *Kaibab Plateau, managed timber areas near Jacob Lake, Ariz., Kaibab National Forest, Southwestern Region.* The Kaibab Plateau, 60 miles long and 40 miles wide, is rich in scenery, water, wildlife, and timber (ponderosa pine and Douglas-fir). Once the population of the great Kaibab deer herd reached 100,000, far beyond the capacity of the range. Trees were destroyed by wildlife, and thousands of deer died of starvation. Public hunting now keeps the herd in balance.

❻ *Trees for Tomorrow Camp, Eagle River, Wis., Nicolet National Forest, North Central Region.* The marked nature trail demonstrates how the forest lives and grows, its relationship with other natural resources, and how man supplements Nature's management. This camp is operated by Wisconsin wood industries in cooperation with the Forest Service as a school primarily for high school and college students and teachers in conservation.

❼ *Joyce Kilmer Memorial Forest, near Robbinsville, N.C., Nantahala National Forest, Southern Region.* This 3,800-acre tract of primeval wilderness was dedicated in 1936 after the Veterans of Foreign Wars suggested a fitting shrine be created to the memory of the author of "Trees." Within the national shrine are 100 species of hardwood trees, including giant yellow-poplars, oaks, birch, basswood, maple, buckeye, and cherry, with shrubs, vines, and flowers carpeting the forest floor.

❽ *Longleaf Trail Vista, near Alexandria, La., Kisatchie National Forest, Southern Region.* This general area includes some of the highest land in the State, ranging up to 350 feet above sea level. It lies within the Red Dirt Game Management Area, where demonstration woodlands are thinned by commercial logging in order to provide food and improved conditions for wildlife.

9 *Hearts Content Scenic Area, near Warren, Pa., Allegheny National Forest, Eastern Region.* This is a 120-acre primeval forest of towering eastern white pine. Parts of the land were presented to the Government by a lumber company and women's clubs. About 15 miles east of Hearts Content is the Tionesta Scenic Area, nearly 2,000 acres of magnificent virgin hardwoods and eastern hemlock.

10 *Federation Forest, on the road between Danby and Peru, Vt., in Ten Kiln Meadows, Green Mountain National Forest, Eastern Region.* This drive through the heart of the Green Mountains will show managed northern hardwood forest types, including sugar maple.

In addition to these areas, many of the 800 National Forest ranger stations contain displays on local trees. All are designed to show the American people how the resources of the National Forests are cultivated and used to serve the country now and in the future.

The Multiple Use Tree, based on an ancient symbol for wood and used as an element of design in this booklet, is the central figure of the symbol for the National Forests.

Each of the tree's oval branches stands for a renewable resource of the forest—water, timber, forage, wildlife, recreation—and the products and services flowing from them. The trunk represents the Nation and its people who benefit from forest resources.

The line inscribing the tree establishes the interrelationship and interdependence of resources and their users. Its continuity symbolizes multiple use management by indicating that each resource is developed and managed in coordination with each of the other resources, and that all are developed and managed for optimum benefits to the Nation.

The National Forest symbol, created by enclosing the tree with a ring bearing the legend, *National Forests—Lands of Many Uses,* is a hallmark of service to a growing America.

NATIONAL FORESTS · Lands of many uses ·

Information

For detailed information on visiting the National Forests, see the map for the headquarters of the Forest Service Region administering the areas you are interested in and write to the appropriate Regional Forester, Forest Service:

Federal Building
Missoula, Mont. 59801

Federal Center
Building 85
Denver, Colo. 80225

517 Gold Ave. SW.
Albuquerque, N. Mex. 87101

324 25th St.
Ogden, Utah 84401

630 Sansome St.
San Francisco, Calif. 94111

Post Office Box 3623
Portland, Oreg. 97208

1720 Peachtree Rd. NW.
Atlanta, Ga. 30309

633 West Wisconsin Ave.
Milwaukee, Wis. 53203

Federal Office Building
Post Office Box 1628
Juneau, Alaska 99801

STATE AND PRIVATE FORESTRY AREAS

Northeastern Area—S&PF
6816 Market St.
Upper Darby, Pa. 19082

Southeastern Area—S&PF
1720 Peachtree Rd. NW.
Atlanta, Ga. 30309

This booklet is one of a series on the many uses and benefits of the water, timber, wildlife, forage, and recreation resources of the National Forest System. Others include *Backpacking in the National Forest Wilderness, Skiing, and Camping.*

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The Forest Service, U.S. Department of Agriculture, is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

The National Forests

Lands Of Many Uses